

Running out of road

Investing in cycling in Cambridge, Milton Keynes and Oxford

A report produced for the National Infrastructure Commission



Introduction

The Cambridge – Milton Keynes – Oxford corridor is one of the fastest-growing, most productive, most innovative places in the UK. It could become Britain's Silicon Valley. But it could also stagnate, strangled by unaffordable housing and inadequate transport.

In its interim report the NIC described two pillars of a strategy to protect and increase its success. The first pillar was to build more homes in it. The second was to create better transport links along it. But there must also be a third pillar, which is the subject of this report and other work: what to do about transport within, and immediately around, the corridor's three main cities.

Oxford and Cambridge, at least, are ideal candidates for growth in every way but one: they are almost uniquely constrained in transport. If current plans succeed, more transport demand will inevitably pour into them. Yet their roads are already at or near capacity, and their historic centres are inviolable.

So what's the answer? New roadbuilding is impossible; gone are the days when plans could be drawn up for a highway through Christ Church Meadow. A tunnelled metro, suggested by some for Cambridge, would also be destructive, disruptive and prohibitively expensive, would take a decade or more to deliver and would not serve most of the journeys that people will need to make. In the centres of these cities, especially Oxford, there isn't even much room for more buses.

One far simpler, cheaper, quicker and less obtrusive answer is staring Oxford and Cambridge in the face, even as they commission studies into busways, light rail and the like. It is something which already epitomises both cities; which, in Cambridge, already has a greater share of journeys than any other mode, and in Oxford not much less. It is, of course, the bicycle. Yet even in Oxford and Cambridge, policymakers treat bikes as essentially marginal – so imagine what cycling could do with the attention it deserves.

This report recommends a series of cycle-specific changes which could increase cycling and reduce traffic. But as this report also states, they must form part of a broader package to help bus users and pedestrians, enable motorists to drive less and keep the roads clearer for users, including many freight users, who have no alternative. Cycling should be a much bigger part of the mix, but of course not the only part. Not everyone can cycle – but many more people could.

For Milton Keynes, in many ways different from Oxford and Cambridge, the issues are less pressing, but will end up the same. There is still capacity on MK's roads. Not for long, however, given the growth to come. Cycling can keep Milton Keynes ahead of the crunch.

The case for the bike is not just narrowly economic, though. The way we travel now makes our cities ugly, including parts of all these cities. More people cycling makes cities safer, cleaner and quieter; makes streets into places that lift their neighbourhoods. More people cycling improves life for everyone, even if they never touch a handlebar.

The way we travel now makes us ill. It fills our air with toxins. It leaves us fat, unfit, and miserable. Every bike lane is a giant, free, outdoor gym, and most cyclists enjoy their commutes. More people cycling could improve the nation's health and happiness.¹

None of this is complicated: it has already happened, years ago, in other countries. Given the head start which cycling has in Oxford and Cambridge, and the time that Milton Keynes has to make a pre-emptive change, they are the best places to show how Britain, too, can make this kind of future.

¹ <https://www.theguardian.com/environment/bike-blog/2017/sep/17/the-miracle-pill-how-cycling-could-save-the-nhs>;
<https://www.sustrans.org.uk/policy-evidence/related-academic-research/health-and-active-travel>

Some of it can be funded locally. But it will also require a change of mindset in government – where cycling is seen as unimportant and unworthy of serious spending. The Government is spending about ten times more on one road project in Cambridgeshire, the dualling of a few miles of the A428, than it spends in its dedicated annual budgets for cycling across the whole of England.

But in Oxford and Cambridge, the bicycle is mass transit, and in Cambridge it is the single most important mode. I found significant political support and will in these places to do more for cycling.

The Government should fund them in a way which reflects how they actually do and could travel. In particular, recognise Oxford and Cambridge as the special cases which they are now, and as the trailblazers for others which they could become.



Andrew Gilligan

Detailed findings specific to each city are made in the city chapters

Findings for Oxford and Cambridge

- **The roads of Oxford and Cambridge are close to a tipping point.** With the levels of growth planned, congestion in these cities risks soon becoming unmanageable.
- **Growth cannot succeed without addressing transport – but the usual approaches do not work.** New roadbuilding is impossible and unwanted. Both cities' centres are already clogged with buses; most growth is in dispersed sites, hard to serve by bus (or metro).
- **Cycling is the cheapest, least disruptive way to improve capacity quickly.** Installing good segregated cycle lanes and junctions could increase cycling, reduce driving, and increase urban roads' capacity to move people (not the same thing as moving cars).
- **Oxford and Cambridge are uniquely suited to cycling.** Cycling is perfectly matched to cities like these with historic centres, small distances and ever more dispersed employment.
- **Cycling is a serious mode in both places.** It has a 43% share of work journeys entirely within Cambridge (car is 25%) and a 29% share of all work journeys by Cambridge residents. Cycling has a 25% share of home to work journeys entirely within Oxford (car is 27%) and a 17% share of all commuting by Oxford residents. The figures exclude students and those who cycle only for a minority of their trip: for instance, to the station.
- **But it is not taken seriously enough.** These numbers should put cycling absolutely front and centre of the cities' transport policy. Yet both councils give it relatively little budget and officer time. There remains, therefore, significant untapped cycling potential.
- **However, there are several encouraging signs.** City and county leaders in both places were highly engaged with and supportive of this report and of cycling. Strategies say the right things; ways must now be found to turn good intentions into action.
- **Provision for cycling in Oxford is poor, in Cambridge better but will become inadequate.** Their main roads are designed almost entirely for cars – though bicycles are up to half the traffic. Cambridge has several (and Oxford a few) good off-road or side street routes, but many are already crowded. A vital route in central Oxford is blocked to cycling.
- **Provision at dispersed employment sites is worse.** Oxford and Cambridge are developing as a series of hubs – with most employment, and employment growth, outside their city centres. To serve such places, cycling is the best alternative to the car. But routes to and around them are usually even worse than those to and around the city centres.
- **Provision in new developments is often disastrous.** Planning policies which say all new development must be cycle-friendly are failing. Many new schemes do nothing for cycling, or even worsen it. If this continues, cycling in both cities will fall, not rise.
- **Provision for out-city commuters is key, but barely exists.** Most commuter car traffic in Oxford and Cambridge is from people who live outside them, albeit often not far outside. This is regularly used as a reason not to limit that same traffic, on the grounds that out-commuters have no alternative to the car. There are, in fact, several ways the bicycle can be made an attractive alternative, either as a whole journey option or a “last mile” solution from park and ride, bus or train.

- **At least £200 million is needed to realise the recommendations of this report.** It is a lot of money by cycling standards, but not by most other transport standards. One nationally-funded road project in Cambridgeshire, for instance, the dualling of the A428 west of Caxton, is costing up to five times this much – £1bn for ten miles.
- **Funding is either not in place, or is not being used enough for cycling.** Greater Cambridge has a “city deal” agreement with the Government which promises up to £500m for transport. However, schemes focus mainly on buses and bolt on cycling as a secondary consideration. Oxfordshire has a growth deal promising up to £150m for infrastructure to unlock key housing sites. It is not yet clear what schemes this will fund
- **The politics of change is all-important.** Political will is the key factor in bringing about change. On the roads any change, however modest, to the status quo, however failing, brings passionate opposition. Too often, politicians give up, or decide not even to try.
- But Cambridge shows that change is achievable if done the right way – and indeed that it can be impossible if done the wrong way. In the late 1990s, it succeeded with highly controversial policies to close city centre streets to traffic. In 2007 and 2016, it failed to get through equally controversial plans for a congestion charge or “virtual” road closures. This report draws some lessons from those three attempts and from my own experience of helping bring about change in London.

Findings for Milton Keynes

- **Getting people out of their cars will be difficult, but not impossible.** Milton Keynes was designed for the car. Its Los Angeles style grid system makes it generally an easy place to drive, and most people do. But the local council recognises that car growth cannot continue indefinitely, and that sustainable modes need to feature more prominently.
- **Milton Keynes already has cycling infrastructure, but it needs improving.** With 300km of cycleways known as the ‘redways’, nearly all of which are segregated from cars, there is already the infrastructure in place for cyclists. However, in places the redways feel as if they have not been touched since they were built, and the network has an air of isolation and neglect. As the council’s cycling strategy admits, the routes “are often perceived to be unsafe.”²
- **The cycle routes don’t always take you where you want to go.** The redways are often less direct than roads, and amazingly, stop at the edge of the city centre.

² https://www.milton-keynes.gov.uk/assets/attach/2/Draft_Cycling_Strategy_Sept_2012_Consultation_Draft.pdf

Recommendations

Below are the high level recommendations applicable to each area. Detailed, city-specific recommendations, including infrastructure schemes, are made in the city chapters and the Appendix.

- **In transport, cycling needs to be integral to everything these cities do.** That does not mean it needs precisely the same share of the budget as it has of journeys. Cycling is cheap. But all transport projects must put cycling at their heart and not at their margins.
- **Cycling and sustainable transport commissioners must be appointed in the three cities to drive through change.** None of what we recommend will happen unless there are people with real clout whose full-time job is to make it happen.
- **Segregated cycle lanes and cycle-safe junctions must be created on main roads in Oxford and Cambridge.** Both Oxford and Cambridge are near the limits of what they can do with side-street and off-road routes. Main road routes are needed, for capacity and for longer-distance commuters who need directness. Junctions across all three cities need improvement to make them safe for cyclists.
- **Schemes must be done properly, or not at all.** All future schemes must conform to accepted high-quality design standards such as the CROW manual or the London Cycling Design Standards. Routes must be implemented as a network, connecting to the places people want to go, and to each other. This sounds obvious, but has seldom happened.
- **Routes must reach beyond the cities' boundaries.** Segregated or good secondary cycle routes should extend to within 5-10 miles. Crossings of ring roads must be improved.
- **Routes which can be used as "first/last mile" options should be created.** Cycling need not replace a whole journey. In the cities, safe cycling routes should connect park and ride sites, and the railway stations, with workplaces. In the surrounding towns and country, cycling routes should connect people to their nearest station or high-frequency bus stop.
- **Some changes can happen quickly.** In Oxford, Queen Street should be reopened to cycles. Some new routes in both cities can also be delivered quickly. In Milton Keynes, a clear route through the centre can be achieved without significant disruption.
- **Car parking should be reduced and cycle parking increased.** In Oxford and Cambridge, car storage for non-residents should not be a function of any main road. Non-residential parking should be restricted in residential areas and some city centre parking given to bikes.
- **In Oxford and Cambridge More general traffic reduction measures must also be taken.** Several busy roads are too narrow for separated bike lanes, so broader traffic reduction is also needed.
- **Government funding must be significantly increased for Oxford and for Milton Keynes.** It is recommended that £150m of the proposed £200m should be spent in and around Oxford. A possible breakdown for this amount is given in the Oxford Chapter. It is recommended that £25m should be spent in Milton Keynes, with a possible breakdown of projects in the Milton Keynes chapter.
- **Funding for cycling in and around Cambridge should largely be taken from reprioritising the existing City Deal agreement to increase its share of spend on cycling.** The agreement promises £100m for transport to 2019/20 and a potential further £400m thereafter. Too much of this is currently allocated to schemes designed mainly for buses, which are less important than cycling in Greater Cambridge's transport mix, less flexible than cycling, and less capable than cycling of promoting modal shift from car. Given Cambridge's importance for cycling, however, a further £25m should be allocated within the City Deal money.
- **In both Oxford and Cambridge, both the extra money proposed by this report and the existing City Deal money should be tied to achieving specific traffic reduction targets.** Cambridge already has a target to reduce rush-hour traffic by 10-15% within 13 years. To qualify for the money, both cities should apply this target and set out their choice of measures for how they would achieve it in four years.

- **Traffic and roadspace reduction schemes in both Oxford and Cambridge must form part of a wider package to benefit all users.** This could include making the park and ride sites free; widening narrow and busy pavements; and improving fine but currently car-dominated places such as St Giles in Oxford. This could help traffic reduction command wide public support.
- **Planning authorities must be held to their policies on cycling.** The local cycling campaign groups in each city should be funded to employ full-time staff to examine all planning applications and legally to challenge those which do not conform to stated Local Plan policies on sustainable transport.
- **The new East-West Rail route must carry bikes to the best Continental standards.** Generous cycle accommodation, peak and off-peak, should be provided on each train.

Chapter 1

The case for cycling

Cycling is the least disruptive way to create the capacity these cities need

1. Oxford, Cambridge and Milton Keynes all need an effective, cheap and – given the special nature of the historic cities’ centres – low-impact way of increasing transport capacity and catering for growth. Cycling is all three.
2. Some examples from London, the only UK city which has invested substantially in cycling, may show this. London is of course different from Oxford and Cambridge. But if cycling policy can have these effects in London – spatially and demographically less fertile territory for the bicycle than either Oxford or Cambridge – it could have the same effects in the two university cities.
3. Two policy instruments proved highly effective both in increasing cycling and reducing motor traffic in the capital. The first, in February 2003, was the congestion charge. In its first year of operation, the charge in central London caused an 18 per cent reduction in the number of four-wheeled vehicles entering the charging zone during charging hours (15 per cent by distance travelled).³ Traffic immediately outside the zone did not increase, as had been expected. Between 2002 and 2016 (the latest figure), the number of people entering central London by car during the morning peak fell by 45 per cent.⁴
4. The congestion charge was also a turning point for cycling. Cycling on the TfL main roads rose by only 4 per cent in the three years before the charge was introduced. It rose by 37 per cent in the three years following the charge.⁵ Between 2002 and 2016, the number of people entering central London by bike during the morning peak more than trebled.⁶
5. The second policy instrument was the separated cycle lane. In the first half of 2016, four physically segregated or low-traffic “cycle superhighway” routes were opened in the central zone (Zone 1) and eight major junctions in the zone were rebuilt to make them safer and less intimidating for cyclists and pedestrians.

Build it, and they will come

6. The policy was based on evidence of what worked elsewhere and on large-scale surveys. These showed that substantial numbers of people wanted to cycle, but felt unable to. The key reason they gave for not cycling was their fear of mixing with heavy traffic.
7. London’s new superhighway schemes included segregated tracks, completely protected from traffic, on Blackfriars Bridge and the Victoria Embankment. By November 2016, six months after they opened, the number of cyclists using these roads had risen by 55 and 54 per cent, respectively, over pre-construction levels. Usage on the Blackfriars Bridge route in the three morning peak hours rose to 4695 cyclists, 26 a minute; on the Embankment route to 3608, 20 a minute.⁷
8. The purpose of roads is to move people and goods, not motor vehicles, which are highly inefficient users of roadspace. (See below for a discussion about goods movement.) The cycle tracks have reduced these roads’ capacity for motor vehicles by varying amounts (slightly at Blackfriars, more significantly at

³ content.tfl.gov.uk/impacts-monitoring-report-2.pdf

⁴ <https://tfl.gov.uk/cdn/static/cms/documents/travel-in-london-report-10.pdf>, table 10.3, p237

⁵ <https://data.london.gov.uk/dataset/cycle-flows-tfl-road-network>

⁶ <https://tfl.gov.uk/cdn/static/cms/documents/travel-in-london-report-10.pdf>, table 10.3, p237

⁷ <http://content.tfl.gov.uk/pic-161130-07-cycle-quietways.pdf>, p15

Embankment) but significantly increased their peak capacity. During the rush hour the Blackfriars Bridge track, which takes up about 20 per cent of the roadscape, carries 70 per cent of all traffic on the bridge⁸ and (counting passengers in buses) about 45 per cent of all people travelling on the road.

9. During the rush hour the Embankment track, which takes up one lane of this four-lane road, now carries 52 per cent of all traffic on the road – in other words, more than the other three lanes put together.⁹ Only a fortnight after its opening, the superhighway roads were already carrying 5 per cent more people in the same space than they were before.¹⁰

10. By the second quarter of 2017 (April-June), cycling in central London as a whole had risen by 6.3 per cent compared to the same quarter the previous year – substantially above the trend.¹¹ Over the same period, traffic in central London fell by 5.8 per cent.¹² By contrast, traffic continued to rise in London as a whole.¹³ In central London, 32 per cent of all vehicles on the road during the morning rush hour are now bicycles.¹⁴

11. The superhighways were not, of course, zero-impact, but their impact was significantly less than for any other improvement delivering similar capacity. Journeys along the Victoria Embankment by car are taking longer than they did before. Congestion during the construction phase increased, though the works were not the only contributors. However, construction was relatively short – just over a year – and congestion is now falling again.

12. Opposition to reallocating roadscape from motoring to cycling is often based on the belief that motor traffic is like water. If you narrow the pipe, runs this argument, it will flood. If you make one route harder to drive down, the same volume of traffic will simply flow to the next easiest route. But in London, this did not happen in practice. Traffic is not a force of nature. It is the product of human choices. If we want more people to choose cycling, we need to make it more attractive.

13. As we show below, this also appears to have happened in the minority of places where adequate cycling facilities are provided in Oxford and Cambridge.

But build it properly

14. Much cycling infrastructure in Britain is so poor as to be pointless, sometimes actually dangerous. It treats cyclists as unimportant and an afterthought, to be provided for only where it will have minimal impact on more important road users and to be abandoned at any point where difficulty is faced or inconvenience to motorists is risked – which are often, of course, precisely the places where cycling provision is most needed. Even in Oxford and Cambridge, where cycling is in several places more important than any other mode, this mentality is sometimes evident.

15. In Oxford and Cambridge, cycling is a serious mode which must be taken at least as seriously as buses or motoring and work must be done to a standard reflecting that – including project management as rigorous as for any motoring scheme.

⁸ Ibid

⁹ Ibid

¹⁰ Ibid, p16

¹¹ <https://tfl.gov.uk/cdn/static/cms/documents/street-performance-report-quarter2-2017-2018.pdf>, p4 (cycling volumes are given one quarter in arrears in these reports)

¹² <https://tfl.gov.uk/cdn/static/cms/documents/tlrn-performance-report-q1-2017-18.pdf>, page 15 (a reduction from 78.8 to 73.3 index points)

¹³ Ibid, page 15 (an increase from 95.94 to 96.04 index points)

¹⁴ https://www.london.gov.uk/sites/default/files/human_streets_0.pdf



Key principles for delivering quality

16. All future schemes in Oxford and Cambridge must meet the six design outcomes and 20 key principles set out in chapter 1 of the London Cycling Design Standards¹⁵ or standards of similar ambition, such as the CROW manual.

17. The design outcomes are that routes must be safe, direct, comfortable, consistent, attractive and adaptable. The requirement for consistency reflects that a route is only as good as its worst section. Gaps, barriers, inconsistent or confusing provision all deter cyclists and must be avoided.

18. The most important of the key principles are that:

- cycling is mass transit and must be treated as such;
- cyclists must be separated from volume traffic, both at junctions and on the stretches of road between them;
- cyclists must be separated from pedestrians;
- cyclists must be treated as vehicles, not pedestrians;
- routes must feel direct, logical and be intuitively understandable;
- routes and schemes must take account of how users actually behave;
- purely cosmetic alterations should be avoided;
- routes should be designed only by those who have experienced the road on a bicycle.

19. Note that the London standards do not specify how these outcomes should be achieved. They could potentially be achieved through the use of temporary or trial materials, as described in chapter 7.

20. Oxfordshire has recently published fairly good standards which meet several, though not all, of these criteria.¹⁶ There is no need for everywhere to have its own bespoke standards, however.

¹⁵ <https://tfl.gov.uk/cdn/static/cms/documents/lcds-chapter1-designrequirements.pdf>

¹⁶ <https://www.oxfordshire.gov.uk/cms/sites/default/files/.../CyclingStandards.pdf>

Junctions are of paramount importance

21. The vast majority of serious injuries and deaths to cyclists happen at junctions, typically when another vehicle turns across the cyclist's path.¹⁷ The key failing of nearly all the main road cycling schemes implemented or proposed in Oxford and Cambridge is that they focus largely on links (the stretches of road between junctions) and fail adequately to separate cyclists from traffic at junctions. There are a number of ways this can be done, including "hold-the-left" junctions, where straight-ahead traffic and cyclists goes at the same time but turning traffic is held.



Links must also be separated from traffic

22. Separation from volume traffic on links is also essential to improve people's perceptions of safety (perhaps more important than actual safety in preventing them cycling). In descending order of space needed it can be done with: full segregation (a physical barrier in the road); stepped tracks (where the cycle lane is at the kerbside, below the level of the pavement but above the level of the road); and "semi-segregation" (typically wands in the road, often inside a bus lane.)

23. Separation from traffic can also be achieved by using lower-traffic side streets or routes through green space, so long as they are sufficiently direct. Sometimes these streets will need to be "filtered" (blocked to through traffic) to discourage rat-running. Side streets are not a realistic option for much expansion in Oxford or Cambridge because most side-street options have already been taken up. However, there are stretches where segregation on main roads could be used to link to backstreets to create new direct corridors.

24. To avoid conflict with people getting on and off buses, the bike lane can pass behind the bus stop, with passengers alighting to a dedicated pedestrian space and crossing the cycle lane to reach the pavement; ramping and an angled approach allows wheelchair users a level surface, slows cyclists and means bus users and cyclists can see each other. This is increasingly common in the UK (there are some examples in Cambridge), has been widespread for decades on the Continent and has worked well in London.

Cycling infrastructure fits well in historic streets

25. Oxford and Cambridge contain many streets of historical importance and sensitivity, often currently dominated and spoiled by motor traffic. Some forms of segregated bike track can work extremely well in sensitive historic locations. Other cycle infrastructure can be as simple and unobtrusive as a single post or bollard.

¹⁷ content.tfl.gov.uk/pedal-cyclist-fatalities-in-london.pdf



Good cycling improvements are popular

26. Every change we proposed to the status quo in London was stridently opposed. But nearly always, when the results of consultations and opinion polls came back, opponents found they were in a minority. In London, the superhighway schemes received 84 per cent support in consultation¹⁸ and 64 per cent support in an independent YouGov opinion poll.¹⁹ Recent cycling schemes in Cambridge have also received high support, for example 78 per cent for the “cross city” schemes.²⁰

27. Many objectors and policymakers believe that “everyone” drives. In fact about 75 per cent of work journeys within Oxford and Cambridge are not made by car.²¹ Of the 348 English and Welsh local authorities Cambridge is 323rd and Oxford 324th for car ownership.²² Talk of “preserving a balance” between motorists and other road users can be code for preserving an unbalanced status quo, where the great majority of roadspace is given to the least efficient users of it. In Oxford and Cambridge, a true balance requires change to ensure that cyclists, pedestrians and bus passengers get more space.

More people cycling improves life for everybody, even if they never get on a bike

28. If cycling schemes benefited only cyclists, they would not attract such wide support. Everyone who cycles rather than driving is freeing space on the roads for others who do not cycle. Everyone who cycles rather than driving improves not just their own health, but everybody else’s health, by reducing pollution, traffic danger and noise. A classic cycling measure, such as blocking residential streets to through traffic, improves life for all who live or walk on that street. Traffic reduction measures in London and elsewhere have delivered significant boosts to footfall and trade at shops, restaurants and other businesses.

29. The London superhighways delivered major direct benefits for pedestrians, including 61 new, upgraded or shortened pedestrian crossings and 1,400 sq m of additional pavement.²³ Other schemes delivered streetscape improvements, dropped kerbs for the elderly and disabled, decluttering, and better lighting.

¹⁸ <https://www.london.gov.uk/press-releases/mayoral/crossrail-for-the-bike>

¹⁹ YouGov for Cycling Works, 8-13 Oct 2014

²⁰ <https://www.greatercambridge.org.uk/transport/transport-projects/cross-city-cycling/>

²¹ 2011 census

²² Ibid

²³ content.tfl.gov.uk/pic-161130-07-cycle-quietways.pdf

30. Despite one recent tragic case, the number of serious cyclist-pedestrian incidents is very small. Of the 404 pedestrian fatalities on the roads in 2015, two involved bicycles; of the 4,910 serious injuries to pedestrians, 100 involved bicycles.²⁴ Properly-designed cycle schemes avoid conflict between the two by providing delineated and separated space for each, using kerbs and different surfacing. Badly-designed schemes, including in Oxford and Cambridge, promote conflict by, for instance, painting a line on a pavement and calling it a cycle lane; or by using “shared space” at busy locations, which is opposed by the UK’s main cycling and pedestrian groups²⁵ and should be avoided.

Cycling has life-changing health benefits

31. According to a recent Glasgow University study, cycling to work is associated with a 45% lower risk of developing cancer, a 46% lower risk of heart disease and a 41% lower risk of premature death, compared to a non-active commute.²⁶

Cycling can also serve freight users, particularly in small cities like Oxford and Cambridge

32. One objection to roadspace reduction is that the roads are needed for freight. That is actually an argument for getting unnecessary traffic off the roads to benefit those with a genuine need, such as many freight users. However, bikes can in fact be an alternative for many common forms of freight. Both Oxford and Cambridge have thriving companies which specialise in deliveries using cargo bikes capable of carrying loads of up to 250kg. For comparison, a Ford Transit Connect van carries 600kg and the SWB version 800-900kg. The companies have built relationships with major national carriers and provide a highly effective “last-mile” service. Lower carrying capacity is made up for by the bicycle’s greater speed and flexibility – it can reach most Oxford and Cambridge city centre destinations more directly and quickly – and far lower costs of purchase and operation.

33. Oxford and Cambridge’s small size make them ideal places for freight consolidation, where all deliveries (except perishables) are made to consolidation centres on the edge of the city centre, or the edge of the city, then taken to their final destinations in a far smaller number of vehicles, including cargo bikes and electric vans where possible.

Cycling improvements are good value

34. London’s fully-segregated cycle superhighway routes cost an outturn average of £10m a mile to build (though it could probably be done more cheaply in Oxford and Cambridge). Each of the four routes has a capacity of between 2,500 and 3,000 users an hour.²⁷ The UK’s most recent tram system, in Edinburgh, cost £115m a mile to build²⁸ and currently offers a peak capacity of 4,250 users an hour on its single route.²⁹ The Edinburgh trams have also reduced general traffic capacity by more than London’s cycling schemes.

35. Tram construction took six years and was highly disruptive; construction of the cycle routes took around one year. Ongoing operational and maintenance costs of cycle infrastructure are significantly lower than for any other form of infrastructure.

²⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/568484/rrcgb-2015.pdf, p93

²⁵ See, for instance, Living Streets’ critique of the Queen Street scheme in the City of London, <https://www.livingstreets.org.uk/media/1864/sharing-the-space-report.pdf>

²⁶ https://www.gla.ac.uk/news/headline_522765_en.html

²⁷ <https://tfl.gov.uk/info-for/media/press-releases/2015/march/mayor-starts-digging-on-crossrail-cycle-superhighways>

²⁸ £776m plus a further £228m in interest on borrowings for 8.7 miles of route; http://www.heraldsotland.com/news/13180893.Sign_off_cost_of_Edinburgh_tram_project_hits__1bn/

²⁹ Each tram has a capacity of 250 and the peak service is 16 trams an hour (eight in each direction); however, the service as a whole is running at only 25% of capacity, see <http://www.bbc.co.uk/news/uk-scotland-edinburgh-east-fife-38460769>

Cycling in Oxford



Chapter 2

Oxford – Findings

In Oxford, I found strong engagement, a demand for change and a wide recognition that the status quo is untenable

36. Major stakeholders in Oxford, including Ian Hudspeth, leader of the county council (the highway authority), Bob Price, the then leader of the city council (the planning authority), Prof William James, the then pro-vice chancellor of the University, and business leaders, were helpful, engaged and enthusiastic, meeting me at short notice in August and leaving me encouraged about the prospects for change. They said the following:

“Something more radical is desperately needed” – Professor William James, pro-vice-chancellor for planning and resources, Oxford University³⁰

“Nothing can happen without fixing transport” – Professor Danny Dorling, professor of geography, Oxford University³¹

“There have been a lot of words, and no action. We need a multi-modal manifesto for the short term, not just medium and long-term strategies that never happen” – Phil Southall, chair of transport sub-group, Oxfordshire Local Enterprise Partnership, and managing director, Oxford Bus Company³²

“Unless drastic changes are made by 2031, congestion will have a severe impact on the economy and people’s daily lives, with many journeys being effectively impossible” – Oxfordshire County Council (in its local transport plan)³³

“I think you’ve got to be quite radical. We are prepared to be bold” – Ian Hudspeth, leader, Oxfordshire County Council³⁴

Motor traffic in Oxford is already near saturation point, and is growing

37. In 2013, Oxford City Council stated that “operational capacity has already been reached or exceeded on much of the road network.” Most of inner Oxford’s busiest roads have seen a further rise in motor traffic since then. Traffic on the Botley Road, the main entry from the west, went up by 10 per cent in 2016 alone and at The Plain roundabout, the main entry from the east, by 5.9 per cent. Disappointingly, as motor vehicle numbers have risen, these approaches have also seen noticeable falls in cycling.³⁵

38. By the 2015 morning peak, the average motor vehicle speed in Oxford had fallen to 9.3mph, slower than a bicycle, and driving one mile in the city took, on average, almost six and a half minutes – nearly half a minute longer than in 2012.³⁶

³⁰ Interview with author.

³¹ Ibid

³² Ibid

³³ http://mycouncil.oxfordshire.gov.uk/documents/s33704/Background%20CA_JUN2816R07%20Connecting%20Oxfordshire%20vol%201%20-%20Policy%20and%20Overall%20Strategy.pdf, p32

³⁴ Interview with author

³⁵ Oxfordshire County Council figures supplied to the author

³⁶ <https://www2.oxpendata.uk/download/5aen-fpys/application%2Fpdf>

39. Most of Oxford's employment, and even more of its growth, is outside the city centre, notably in the "Eastern Arc" between John Radcliffe Hospital and Cowley. Traffic congestion in these places can be even worse. The hospital's official advice to patients states that they should "allow one hour to find a [parking] space."³⁷ It recently fought a court case with one of its own surgeons who said he was forced to park illegally to reach his sick patients on time. At another major Eastern Arc employer, Centrica, it can take more than half an hour simply to drive out of the car park.

Without change, Oxford will be unable to cope

40. Over the next 13 years, there are to be 85,000 new jobs and 100,000 new homes in the county.³⁸ 24,300 of the jobs and 28,000 of the homes will be in the city of Oxford itself³⁹ and most of the others will be nearby. The county council estimates that this could result in a 25% increase in journeys within the city boundary, and 13,000 more car commuter trips each day.⁴⁰

But the usual options for change are limited

41. Oxford has almost 1200 listed buildings, 199 of them at Grade I, by far the greatest concentration in England and the second-largest number of any city after London.⁴¹ Around its historic core is a crescent of green space, just as much part of what makes it unique and precious. There is simply no room to build new roads in Oxford. Still less is there any desire to do so.

42. Bus improvements (new rapid transit routes) are proposed by the council and offer the possibility of reducing car use from surrounding towns. However, there is little capacity in the city centre for more buses. Almost 200 buses an hour (100 in each direction), including sightseeing buses, currently use St Aldates and the High Street, near these streets' realistic limits. Buses to the centre – 15 to 25 an hour in each direction on most corridors – are already about as frequent as they could be.

Policies to make new developments bike and public transport-friendly are failing

43. Oxford City Council's core strategy, its main statement of planning policy, says it "will seek to ensure the transport impact of any new development is fully mitigated... planning permission will only be granted for development that prioritises access by walking, cycling and public transport."⁴² In practice, it does not happen. The Centrica office mentioned above opened only in 2013, part of Oxford Business Park, described by council officers as "chronic" and a "case study in bad planning" with almost nothing for bikes or public transport.⁴³ Nearby, the redevelopment of Templars Square shopping centre in Cowley received planning permission in July this year even though it includes almost no provision for cyclists or public transport users.

44. Outside the city, in South Oxfordshire district, a new 3,300-home neighbourhood called Great Western Park is now under construction at Didcot. There are no facilities for cycling, beyond a few racks. Even though the development is little more than a mile from the town's mainline railway station, it is not possible to walk or cycle directly to it.

45. In central Oxford, the new Westgate shopping centre is a textbook example of the failure of planning policy in this area. It was opened with virtually none of the new cycle parking spaces promised by the developers (and which were a condition of planning permission.) Eight months on, cycle parking is still not what was promised, much is inconveniently located and some is actually charged for.

³⁷ <http://www.ouh.nhs.uk/hospitals/jr/find-us/default.aspx>

³⁸ <http://www.oxfordshirelep.com/content/strategic-economic-plan>

³⁹ https://www.oxford.gov.uk/downloads/file/3738/oxford_local_plan_2036_preferred_options_full_document_low_res

⁴⁰ https://consultations.oxfordshire.gov.uk/gf2.ti/f/545058/14120997.1/PDF/-/Connecting_Oxfordshire_vol_2_section_i__OTS.pdf, p2

⁴¹ <https://historicengland.org.uk/research/heritage-counts/2016-heritage-and-place-branding/indicator-data/local-authority-profiles/>

⁴² https://www.oxford.gov.uk/download/downloads/id/1450/oxford_core_strategy.pdf, pp 83, 85

⁴³ Interviews with author

Relatively little has been done to bring about change

46. Oxford was a pioneer in traffic reduction. It started Britain's first permanent park and ride service, and was an early adopter of pedestrianisation. But the pace of change has slowed. Oxford's last major traffic reduction scheme – the pedestrianisation of Cornmarket Street and the daytime car ban on the High – was 19 years ago, in 1999, though it has completed the Frideswide Square public realm scheme (see below) more recently. Lack of progress on transport was identified by the 2013 Oxfordshire Innovation Engine report as one reason why the city and its surround had in recent years failed to match the growth of comparators, including Cambridge.⁴⁴

Oxford is already a city of cycling and public transport, not cars

47. Oxford has Britain's second-highest cycling levels, after Cambridge. Between 7am and 7pm an average of 860 bikes an hour, 14 a minute, cross Magdalen Bridge. Over the 24 hours, bicycles make up 46 per cent of all vehicles on this bridge, with cars and taxis comprising 36 per cent.⁴⁵ In the city as a whole, 17 per cent of people cycle to work, about six times the UK average; for work journeys entirely within Oxford, it is 25 per cent.⁴⁶ According to the council, only 32 per cent of work journeys in Oxford are made by private motor vehicle.⁴⁷ The rest are made by bike, bus and on foot.

48. Cycling is important at the times, and in the places, of greatest demand for roads. During the morning peak hour into Oxford on the Banbury Road, for instance, the number of bicycles (417) already approaches the number of cars (527).⁴⁸ Even excluding pedestrians, only about a quarter of people moving along the Banbury Road at this time are in cars – the rest are in buses or on bikes.

49. More children than average cycle: what is thought to be Britain's top cycling school, Cherwell, is in Oxford (58% of pupils cycle.)⁴⁹

But the road network does not reflect how Oxford actually travels

50. Despite the huge numbers of cyclists using them, Oxford's main roads and junctions are still laid out almost entirely for the benefit of the motor vehicle. They look little or no different from the roads of a typical British city where almost nobody cycles. One council officer, though quite pro-cycling, still spoke of providing cycle facilities where they could be “fitted in” to the roads. In places such as Magdalen Bridge, given the balance of usage, the approach should be to “fit in” cars around bikes and pedestrians.

The council does not have even one officer specifically working on cycling

51. The county council, the highway authority, has dedicated staff for roads, parking and public transport, but none for cycling, despite its importance as a mode in Oxford. Officials state that cycling interests are integrated into the roads teams.

Spending is not enough and money generally is severely lacking

52. Between 2011/12 and 2015/16 Oxfordshire council says its transport spend on capital projects averaged £33.5m a year, of which about £600,000 a year (1.8%) was spent on cycling-specific projects. This was a county-wide figure; the proportion spent in Oxford was a little higher. The council stresses that many highway schemes with substantial cycling components, such as the new Access to Headington

⁴⁴ www.sqw.co.uk/files/2613/8690/7243/Oxford_engine.pdf

⁴⁵ Figures from Oxfordshire County Council

⁴⁶ Census 2011.

⁴⁷ https://www.oxford.gov.uk/download/downloads/id/2637/54_transport.pdf, p3

⁴⁸ <https://m.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/roadsandtransport/transportpoliciesandplans/areatransportstrategies/oxford/A4165BanburyRoadA4144WoodstockRoadFinalReport.pdf>, page 9

⁴⁹ <https://www.cherwell.oxon.sch.uk/information/school-travel>

scheme (see below), are not included in this figure. Even including this, however, it seems clear that current levels of capital expenditure are not remotely sufficient for delivering the transport improvements that the city and its immediate surrounds need.

Provision for cyclists on the main roads is almost never adequate

53. Most injuries and deaths to cyclists happen at junctions. But at no main road junction in Oxford has truly adequate provision been made for cyclists. Conflicts abound. Few, if any, junctions feel safe and comfortable to cross on a bike. At The Plain roundabout, at the eastern end of Magdalen Bridge, one of the city's busiest cycling junctions, more than £1 million was spent on a supposedly cycle-friendly remodelling. It falls so far short of adequacy that large yellow signs have had to be placed there warning motorists to "think bike."

54. There is more provision on links (the stretches of road between junctions), but this typically involves either lanes painted on pavements, creating conflict with pedestrians and requiring cyclists to give way at each side road; or painted advisory lanes on the road, often (quite legally) parked over; or stretches of shared bus lane; or all three in quick succession. There are no true segregated lanes on any arterial road, though there are stretches on orbital roads (notably Marston Ferry Road and parts of the bypass).

Many routes have gaps and cyclists are banned from the main routes through the city centre

55. A cycle route is only as good as its weakest point. But most of Oxford's routes have gaps or barriers, or sections involving heavy traffic. Few cycle lanes join up adequately, exemplified in the city centre. Central Oxford's main streets form a simple cross, meeting at Carfax. But between 10am and 6pm cyclists are barred from two arms of the cross: Cornmarket Street, the main north-south road, and Queen Street, the main east-west road, leaving a serious hole at the heart of the city's cycle network.

56. There is an alternative north-south route, but it is harder to find, more convoluted and involves a right turn in busy traffic (the most dangerous movement for a cyclist) for those coming south from St Giles. The alternative east-west route is worse, requiring cyclists to box round three sides of a square (via Pembroke Street) and also needing a right turn in busy traffic in St Aldates in the westbound direction.

There is no satisfactory route from the station to the centre

57. This is particularly important given cycling's potential as a "last mile" mode to make rail a convenient alternative to the car for longer-distance commuters. Frideswide Square, through which nearly all cycle journeys from the station to the centre must pass, looks pretty but is a missed opportunity for the roughly 20% of its traffic which is bicycles. Shared space schemes such as this seldom work and the county council's latest draft pedestrian design guidance is rightly cautious about them. They are strongly opposed by both pedestrian and cycling groups as causing conflict between the two (see, for instance, Living Streets' critique of the Queen Street scheme in the City of London).

58. In this particular shared space, there is less conflict than otherwise because the cycling facilities are too poor to be of much use. From observations, the majority of cyclists continue to use the road. Although speeds may be lower than before, the road is much narrower and the layout includes three new roundabouts, which are intimidating for cyclists. Further west, both of the two main routes use busy, intimidating and unprotected roads.

There is not enough bike parking

59. Cyclox, the Oxford cycling campaign, states that there are only 1,284 public bike parking spaces in the city centre.⁵⁰ Certainly, even in August, presumably the time of least demand, it was often very difficult to find a parking space. Many bikes have to be left without being attached to anything, simply locked around the wheels, which must contribute to Oxford's sizeable cycle theft problem. The station is often short of bike spaces, again leading to the "last-mile" potential of cycling being held back.

Current proposals for improvement fall short

60. Subject to funding, the county proposes a series of "cycle super routes" for (in clockwise order) Woodstock Road, Marston Ferry Road/ Headley Way, Marston Road, Windmill Road/ The Slade, Iffley Road, Abingdon Road and Botley Road. These aim for a "high level of continuous and uniform provision" in both directions with "complete or semi-segregation provided where possible," but sharing of bus lanes and mandatory painted lanes elsewhere. Banbury Road, London Road and part of the Cowley Road would be "cycle premium routes" with lesser facilities, largely shared bus lanes.⁵¹

61. The key requirements for any main road cycle route are that it should be separated from traffic, deal properly with junctions and have a high level of consistency. The council's own draft cycling design standards, which are quite good, specify "stepped cycle tracks" as the minimum provision on busy main roads.⁵²

62. The two detailed proposals so far published, in "corridor studies" for Banbury and Botley Roads, do not achieve these requirements. No junction has been satisfactorily addressed, routes lack "continuous and uniform provision" and, though some segregation is proposed, there are still long sections mixing with traffic.⁵³

Where adequate provision exists, people respond

63. Away from the main roads, Oxford does have some good or reasonable low-traffic cycle routes through backstreets or green space – to New Marston and Marston via New Marston Meadows; a backstreet route (albeit slightly convoluted) to the east of the Banbury Road; and one parallel to the Abingdon Road, accessed from the city centre by a (not particularly easy to navigate) pedestrian/cycle bridge over the Thames. The Thames towpath also provides a pleasant traffic-free link from the Iffley Village area. The routes are mostly well signposted. However, they are not completely low-traffic; cyclists must often use heavily-trafficked roads to reach them.

64. It is notable that cycling is significantly higher in the areas served by all these cycle routes than in other parts of Oxford, even where those other areas are closer to the city centre. Up to 29 per cent of those in Marston, for instance, cycle to work.⁵⁴

65. One state school in Oxford, Cherwell School, is thought to have Britain's highest percentage of pupils regularly cycling to school (58%).⁵⁵ It is unlikely to be a coincidence that it lies directly on Oxford's main stretch of segregated cycle lane, on Marston Ferry Road, and is also served by the North Oxford/Summertown backstreets cycle route.

⁵⁰ <http://www.cyclox.org/wp-content/uploads/2010/01/Cyclox-position-statement-on-Bike-parking-in-Oxford-2017-final.pdf>

⁵¹ https://consultations.oxfordshire.gov.uk/gf2.ti/f/545058/14120997.1/PDF/-/Connecting_Oxfordshire_vol_2_section_i__OTS.pdf

⁵² <https://www.oxfordshire.gov.uk/cms/sites/default/files/folders/documents/roadsandtransport/transportpoliciesandplans/newdevelopments/CyclingStandards.pdf>

⁵³ <https://www.oxfordshire.gov.uk/cms/content/ltp4-area-strategies>

⁵⁴ Census 2011, ward and area breakdown

⁵⁵ <https://www.cherwell.oxon.sch.uk/information/school-travel>

66. However, backstreet routes cannot meet the need for change. Many of the existing routes (Marston excepted) are not particularly direct; nor are they obvious or intuitive; many cyclists still prefer the main roads. Nor are there many further opportunities on backstreets, though some will be explored in the recommendations below.

Where provision is inadequate, cycling has often fallen

67. Cycling in Oxford rose between the 2001 and 2011 censuses. But more recently, despite (or because of) the city's strong growth in other forms of travel, cycling on most of the main road approaches to the city centre has fallen.

68. On four of the six main approaches – Magdalen Bridge, Osney Bridge, Walton Street and Woodstock Road – cycling in 2017 is down on 2015, by between 6 and 18 per cent.⁵⁶ These approaches include the two most recent main schemes designed to improve provision for cyclists, Frideswide Square and The Plain, supporting a view that these schemes do little to encourage, or facilitate, cycling. The two approaches where cycling has risen are Folly Bridge and on Banbury Road, where motor traffic is down.

69. Without drawing firm conclusions from a limited set of figures, this does suggest a relationship between rising traffic, poor provision and falling cycling.

⁵⁶ Figures from county council

Chapter 3

Oxford – Recommendations

Five high-quality segregated or low-traffic routes should be created, several of them continuing beyond the city boundary to Eynsham, Kidlington and Wheatley.

70. Botley Road – Main road route, segregated or semi-segregated throughout (a short stretch near Binsey Lane may be too narrow), linking to Seacourt park and ride. New pedestrian bridge at Osney Bridge; cyclists to use former pavement space on existing bridge. The route cannot be finished until after the Oxford station redevelopment, which should be designed with segregated tracks under the new railway bridge. This route should continue to Eynsham via a segregated track (already proposed) along the B4044.

71. Banbury Road – Main road route, segregated or semi-segregated throughout, linking to Parkway park and ride. This route should continue to Kidlington and any development sites between it and Yarnton, with radical improvements to the crossing of the A40.

72. Eastern Arc – Main road route, segregated or semi-segregated throughout, along London Road from Brookes University to Headington, Thornhill park and ride and continuing to Wheatley, including major improvements to Barton roundabout. Branches to John Radcliffe Hospital via filtering on Osler Road; to Old Road campus and Churchill Hospital site via filtering on Lime Walk. Links with existing “Access to Headington” scheme on The Slade and Headley Way. This route, particularly aimed at “last mile” cyclists, would link Thornhill park and ride to many major employment and university sites in the Eastern Arc.

73. High Street/Iffley Road/East Oxford – Segregation using stepped tracks between city centre and Jackdaw Lane, linking to two existing backstreet routes to Rose Hill via Meadow Lane and to Cowley/Greater Leys via Cricket Road. Some more filtering needed on the backstreets. Could also link to Barracks Lane route via Kenilworth Lane. Serves east Oxford while avoiding the narrow and difficult sections of Iffley and Cowley Roads.

74. Marston cyclepath – Extension of existing, successful route from New Marston to John Radcliffe Hospital and New Barton via short stretches of improved track on Marston Road, filtering on Jack Straw’s Lane, better crossings of Marston Road and Headley Way, improved track on the hospital approach road, crossing of A40. The “Access to Headington” plans for this section of Headley Way don’t provide a good enough crossing.

Other links should also be created

75. A plan to link Jackdaw Lane to the Thames towpath route with a new bridge was dropped after opposition by the landowner, Christ Church. It could be an extremely useful link between East Oxford and the south of the city centre and new developments in West Oxford, and should be revived.

76. The University’s transport strategy raises the possibility that cycling could be allowed through the University Parks.⁵⁷ This would eliminate most of the dogleg on busy roads needed to access the North Oxford backstreet cycle route.

⁵⁷ https://www.admin.ox.ac.uk/media/global/wwwadminoxacuk/localsites/estateservices/documents/travel/Transport_Strategy_external_19-12-2014.pdf, p27

77. The informal path between Hill Top Road and Roosevelt Drive should be upgraded to create new links between East Oxford and Brookes University, the Old Road campus and the Churchill Hospital site.

78. There may be scope for more filtering in Jericho (along Walton Street) to create a safer route for cyclists.

79. Safe “last mile” cycle routes can be created between both Thornhill and Redbridge park and ride sites and the major employment areas at Cowley, using better linking tracks to the existing cycle track along the bypass. Some junctions, such as the crossing at Garsington Road, would also need to be improved.

Junctions must be made safe

80. There is enough space for improvement at most of the worst junctions. New layouts should include physical separation between cyclists and motors; and measures – such as separate cycle phases and “hold the left” lanes – to reduce or eliminate the conflicting movements which cause most death and injury. These are no longer novel; there are dozens of such junctions elsewhere, many in places with much lower cycling rates.

81. Junctions to be prioritised for improvement should include Woodstock Road/St Giles, The Plain, Thames Street/St Aldates, Frideswide Square, Hythe Bridge Street/Worcester Street and the crossings of the A40 at Woodstock Road, Banbury Road and London Road.

Queen Street should be opened to cyclists

82. Queen Street, the main east-west route through the city centre (and to and from the station), is open to buses but not cyclists, supposedly to avoid risk to pedestrians. This leaves a major hole in the cycling network, is not justified by the facts, and should be reversed – something which could be done quickly. Queen Street is a wide street, normally around 12 metres wide and 11m at its narrowest point. It has no street furniture, not even streetlights, apart from a handful of cycle racks, benches and litterbins. Pedestrians in 2014, when the old Westgate shopping centre was still open, peaked at 4,000 during its busiest hour (a Saturday in June between 1 and 2pm).⁵⁸ Numbers at other times would be fewer.

83. Using London “pedestrian comfort level” (PCL) guidance,⁵⁹ the recommended width to accommodate the comfortable movement of 4,000 pedestrians per hour in streets without street furniture is 6.6 metres, little more than half the width available in Queen Street. In other words, there is enough space for cycling to be allowed here. To avoid ped-cycle conflict, there should be a defined cycle track, using a different surface and perhaps a pedestrian-friendly sloping kerb.

84. The new Westgate is, of course, larger than the old one. The transport assessment done as part of the planning application states that it will generate an extra 508 pedestrian trips per hour (254 in each direction) compared with the (still very substantial) movements in and out of the old centre. This still leaves about 40 per cent more space than the minimum PCL.

85. The county has justified the closure with estimates by a consultant, Jacobs, that the new and larger Westgate will in fact more than double the number of pedestrians using Queen Street – to 8,500 an hour.⁶⁰ This appears to be based on the fact that the new centre has double the floorspace of the old one. However, of course, not everybody walking along Queen Street in 2014 was going to the shopping centre. And if cycling was allowed, some who might otherwise walk would cycle instead.

⁵⁸ Information from Oxfordshire county council

⁵⁹ content.tfl.gov.uk/pedestrian-comfort-guidance-technical-guide.pdf

⁶⁰ Provided to the author by the council

“First mile” and “last mile” cycling must be promoted

86. “Last mile” routes are described above and safe “first mile” cycle routes must also be developed in towns such as Bicester, Didcot and Witney, connecting areas of the town to railway stations or bus stops. Better cycle parking must also be provided at the interchange location, where there is often little or none at the moment. Extensive promotion of the routes should be carried out. The council is in the early stages of feasibility and design for a series of routes in the “Science Vale” around Didcot, Harwell, Culham and Abingdon. These need to be of high quality.

More cycle parking should be provided

87. One car space can provide room to park ten bicycles. In the centre, such spaces should be removed both on street (at Broad Street and St Giles, for instance) and in parts of public car parks. The redeveloped station must include a Cambridge-style bike garage able to accommodate thousands of bikes. Park and ride cycle parking should grow.

Oxford should take meaningful traffic reduction measures

88. Several of the busiest roads for cycling, such as Cowley Road, St Clement’s Street and Headington Hill, are simply too narrow for segregated lanes. The only thing that can make the cycling experience along those roads acceptable, and encourage new cyclists, is a broader plan to significantly reduce motor traffic along them.

89. Oxfordshire council is studying four main options, including point closures to block several roads to traffic, except buses and access, effectively preventing motor vehicles driving through the city centre, except in the west-to-south (and vice versa) direction via Oxpens Road.

90. The council is also examining a congestion charge, which it previously dismissed on the grounds that London’s cost too much to operate. However, costs in Oxford would be lower, because the technology is cheaper now and the number of entry points is less (about six for a central scheme, 20 for a whole-city scheme, versus 197 in London.) Any charge in Oxford need not copy London’s relatively blunt version but could allow, if desired, different (or no) charges at different times of day, in different places, or for different kinds of vehicle.

Other traffic measures under consideration would be of value, but would achieve much lower traffic reduction

91. Britain’s first zero-emission zone is to be established in part of central Oxford, initially a very small part. Zero-emission zones will of course reduce emissions. But even as they become wider in extent, they will not reduce congestion, at least not for long. As more vehicles become zero-emission, congestion will quickly increase again. A zero-emission car is as inefficient a user of roadspace, and just as hazardous to cyclists and pedestrians, as a conventionally-fuelled car. However, the issue of pollution has significant potential to mobilise wider support for traffic reduction.

92. A workplace parking levy is also under consideration, modelled on that in Nottingham, which charges businesses £387 per year per parking space and raises about £10m a year for transport improvements. Impacts on traffic and congestion, if any, there have so far been relatively modest.⁶¹ Some business representatives in Oxford told me that they preferred a congestion charge to a parking levy. The university, which already charges its workers a substantial sum for a parking space, said that a levy would not affect the vast majority of driving done into the city.

⁶¹ <https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/26206>

Any traffic reduction measures must form part of a wider package to benefit all users

93. Money provided by government or raised by a congestion charge should be spent on the cycling improvements detailed above but also on other measures – particularly for people who lack good alternatives to driving. This could include making the park and ride sites free (which would also, of course, require their expansion); improving the bus service, especially country buses; charging lower and simpler fares; imposing a single ticketing structure between operators in the city to end wasteful duplication; widening narrow and busy pavements; improving fine but currently car-dominated places such as St Giles; introducing freight consolidation in the city centre (using electric vans and cargo bikes) to reduce the movement of goods vehicles; and reopening the Cowley branch rail line, with new park and ride stations along it.

However, pro-cycling changes in many places can be made quickly, and should not be dependent on the full traffic reduction package being agreed first

94. Many cycling improvements, including better junctions and new routes, are possible before any general package to reduce traffic, and should be proceeded with accordingly. There is no need to wait for every one of the elements suggested above to be in place before starting on anything.

A full funding package should be agreed to pay for these improvements, conditional on commitments to cycling, traffic reduction and other sustainable transport measures being taken

95. Despite its recent growth deal, Oxford remains shorter of funding than Cambridge. It needs infrastructure funding of similar size and on similar terms, tied to benchmarks which should include a 15% traffic reduction in four years.

96. Of the £200m we suggest spending across the three cities, we suggest that about three-quarters, £150m, should go for cycling in and around Oxford – subject, as stated, to concrete plans being drawn up to achieve peak-hour traffic reductions of 10-15% within four years. This sum should nearly all be spent on infrastructure improvements to roads and junctions.

97. The four proposed main-road cycle routes total about 17 miles, including about 14 miles of new separated track (adequate stretches of track are already planned on parts of the London Road route and are already in place between Thornhill and Wheatley). At London prices, based on the recent superhighway schemes, 14 miles would cost about £140m for both the cycle track and the junctions along the routes.

98. However, though Oxford is busy and complicated, it is less busy and complicated than London. It is estimated that some or most of the separated infrastructure proposed for Oxford, particularly that outside built-up areas such as the B4044 (Botley-Eynsham) route, would cost less than in the capital and that the total network could be delivered to high standards for an average of about £8-9m a mile. This would leave around £25-40m for back-street routes and junctions not on the four proposed main-road routes. Given the land issues, the cost of the potential new bridge has not been included in our calculations.

Cycling in Cambridge



Chapter 4

Cambridge – Findings

Traffic in Cambridge was stable, but is now growing quickly

99. As the city’s transport strategy states, parts of the road network in Cambridge “frequently operate at or near capacity” at peak times.⁶² Cambridge’s average traffic speed (12.2mph in the peak hour in 2015/16) is a bit higher than Oxford’s but in recent years, after a period of stability, traffic entering Cambridge has started to grow fast. County council figures show increases of 8 per cent in the three years to 2016;⁶³ between 2015 and 2016, Department for Transport estimates show further rises of just under 3 per cent in motors on many inner Cambridge main roads, including Northampton Street, Huntingdon Road, Lensfield Road, Hills Road and Gonville Place.⁶⁴

Without change, Cambridge’s roads will soon be unable to cope

100. Cambridge is undergoing a perhaps more fundamental transformation than Oxford, which has been an industrial city since William Morris opened his car plant in 1914. Cambridge was a smaller, more cloistered place, but is now industrialising too – and in one of the UK’s highest-growth industries. Fairly stable until the 1980s, the city’s population has risen about 55 per cent since and is now 131,000, only about 30,000 behind Oxford’s. Yet its roads are, and will unavoidably remain, those of a large market town.

101. The population of South Cambridgeshire, the district entirely surrounding the city, has also risen by about the same percentage over the period, to 153,000. By 2031 there are planned to be 44,000 new jobs and 35,000 new homes in the two places, forecast to cause 32% traffic growth in the Cambridge morning peak and 38% growth in South Cambs.⁶⁵ By any standards these are significant increases. However, the county council flatly states that “significant increases in general vehicular traffic cannot be accommodated on the city’s road network.”⁶⁶

But options for change, while slightly wider than in Oxford, remain limited

102. New roads have been built outside the city, but have succeeded mainly in demonstrating that there is nowhere for the extra traffic generated to go once it reaches Cambridge. Again, there can be no question of roadbuilding in the city: it has around 800 listed buildings, 67 of them at Grade I.⁶⁷ As in Oxford, its core is surrounded by equally inviolable green space – which is in turn surrounded by suburbs full of the kind of people who are very unlikely to allow new roadbuilding.

103. There is scope for improving buses, whose usage has dropped. The centre is less saturated by buses than Oxford’s, but around 80 buses an hour still use the lower part of St Andrew’s Street and about 120 an hour the Drummer Street/ Emmanuel Street area. The dispersed sites away from the centre where most growth will be harder to serve effectively by bus.

⁶² <https://www.scambs.gov.uk/sites/default/files/documents/Transport%20Strategy%20for%20Cambridge%20and%20South%20Cambridgeshire%20Transport%20Strategy%20and%20High%20Level%20Programme%20April%202014.pdf>

⁶³ <https://ccc-live.storage.googleapis.com/upload/www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/Traffic%20Monitoring%20Report%202016.pdf?inline=true>

⁶⁴ <https://www.dft.gov.uk/traffic-counts/cp.php?la=Cambridgeshire>

⁶⁵ <https://www.cambridge.gov.uk/sites/default/files/documents/Part%20201%20-%20Modelling%20Report.pdf>

⁶⁶ https://ccc-live.storage.googleapis.com/upload/www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/2014_01_23_TSCSC_Strategy___v4.0_JSTSPG_changes_POST_JSTandSPG.pdf?inline=true,p20

⁶⁷ <https://historicengland.org.uk/research/heritage-counts/2016-heritage-and-place-branding/indicator-data/local-authority-profiles/>

104. At the suggestion of the new Greater Cambridgeshire mayor, James Palmer, a study has been launched into building tunnels beneath Cambridge for light rail, buses or the untried concept of “affordable very rapid transit” using bored tunnels only 12 feet wide. Another option, according to the published brief, is a monorail.⁶⁸

105. It is fair to say that all those I discussed this with were sceptical about it. Indeed, tunnelled light rail should perhaps be seen as a way of avoiding the actual issues rather than addressing them. It is sometimes cited as a magic alternative to politically difficult subjects such as traffic reduction, but it is not a realistic answer and it will not deal with Cambridge’s problems.

106. Even if the Fenland soil allows it, any tunnelled project would be colossally expensive, disruptive and destructive; nearly all tunnelling requires the demolition of some buildings on the surface. At 2017 prices the closest comparable UK tunnelled project, a recent extension of the Docklands Light Railway, cost around £150 million a mile;⁶⁹ the most recent surface scheme, in Edinburgh, around £115 million a mile.⁷⁰ These sums exclude operating costs; any scheme in Cambridgeshire would need sizeable ongoing subsidies, since the population of the area is much lower than in any other place given a light rail system in the UK and not high enough to cover its operating cost through fares.

107. It would take too long to deliver; Edinburgh took 11 years from approval to opening, and six years to build, for less than nine miles of (surface) route. In a city developing as a series of hubs, any rail project would be overly focused on journeys to the city centre (though orbital routes are also suggested).

108. Most importantly, it is unnecessary. Cambridge is a small place. It already has an affordable rapid transit system which could be expanded much more easily, cheaply, quickly and usefully: the bicycle.

Cambridge is the UK capital of cycling

109. Cambridge has by far the highest cycling levels in Britain and possibly in the English-speaking world. Of those who both live and work in Cambridge, 43 per cent cycle to work and 25 per cent drive. In total 29 per cent of Cambridge’s working residents cycle to work, almost ten times the British average and only 2 per cent below the proportion who travel by car.⁷¹

110. This is sometimes attributed to the high student population; however, students not in employment are not counted as workers and do not appear in these figures. People who use a bicycle for less than half their journey by distance, for example cycling to the station to travel to London, are also excluded. If these groups were counted, the figure would be still higher.

111. In central Cambridge, 37 per cent of all vehicles crossing the road bridges over the River Cam (Fen Causeway, Silver Street, Bridge Street, Victoria Avenue and Elizabeth Way) are bicycles.⁷² Across the year, adding the large cycle flows across the car-free bridges at Mill Lane, Garret Hostel Lane, Jesus Lock, Fort St George, Cutter Ferry, Riverside and Green Dragon, it is likely that bicycles are more than half of all vehicles crossing the Cam.

Yet there is still huge potential for further growth – much of it just outside the city

112. With these sorts of figures, it might be asked: why do we need to do more? Firstly, given Cambridge’s congestion problems, even 25 per cent car commuting within the city is clearly too high. Second, given the cycling share achieved with relatively little help, it is clear that an even higher share is

⁶⁸ <http://cambridgeshirepeterborough-ca.gov.uk/assets/Combined-Authority/Combined-Authority-July-2017-Agenda.pdf>, p62

⁶⁹ £180m for 2.5km (1.6mi) in 2007, see <https://tfl.gov.uk/info-for/media/press-releases/2007/july/tunnel-extending-docklands-light-railway-to-woolwich-completed>

⁷⁰ £776m plus a further £228m in interest on borrowings for 8.7 miles of route; http://www.heraldscotland.com/news/13180893.Sign_off_cost_of_Edinburgh_tram_project_hits_1bn/

⁷¹ All figures from 2011 census

⁷² <https://ccc-live.storage.googleapis.com/upload/www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/Traffic%20Monitoring%20Report%202016.pdf?inline=true>

possible with more encouragement. There are still quite big differences between cycling's commute mode share in different parts of Cambridge – highest in Newnham, lowest in Cherry Hinton – related in part to their access to good cycle routes.

113. Third, and most importantly, the majority of Cambridge's congestion is caused by traffic from outside the city. Even more than Oxford, Cambridge is developing as a series of hubs outside the centre, some beyond the city limits, some within them. Enormous cycling potential from what is called the “necklace” of large villages and future development sites around Cambridge, and on the outskirts of the city itself, is not being catered for.

Cambridge has done far better than Oxford on cycling, delivering significant improvements in the city, but wider traffic reduction efforts are in danger of stalling

114. In recent years Cambridge has closed central streets to cars but not bikes, opened the UK's largest undercover bike park, with space for 2850 cycles, at Cambridge station, and installed or proposed several new cycle routes. It has opened more recent park and ride sites and built a guided busway with a cyclepath alongside it to St Ives and Trumpington. Britain's first ‘Dutch-style’ cycle roundabout is being delivered in the city.

115. There is political will and support to improve cycling and a 12-strong “cycling projects team” is employed. There is a target to raise cycling to 40% of all commuter journeys by Cambridge residents (from 29%) by 2023. This work has been rewarded with substantial rises in cycling- by 59 per cent between 2004/5 and 2016.⁷³ The “city deal” (see below) provides major Government funding for transport. A higher proportion of the budget is spent than in Oxfordshire, although still quite low, see below.

116. However, proposals to cope with future growth by introducing peak-time “congestion points,” virtual road blockages, in Cambridge were mishandled and were scrapped in 2016 after a public backlash. In the most recent two years for which there are figures, 2014-16, cycling has fallen by 2 per cent.⁷⁴ Political leaders recognise that new approaches to reducing traffic are needed, but are now more cautious than in Oxford.

117. There appears to be growing conflict between the Greater Cambridge Partnership (the city and South Cambs councils), the custodian of the City Deal Funds, and the Cambridgeshire and Peterborough mayor, James Palmer, who has demanded a halt to many of the partnership's proposed improvements lest they compromise his light rail proposals. Even if light rail was the answer to Cambridge's transport needs, which it is not, it cannot be delivered for many years and clearly should not be allowed to stop progress on shorter-term improvements. Whether the shorter-term improvements proposed by the partnership are the right ones is a separate question, and is addressed below.

118. The mayor's interim transport strategy statement, published in May 2018, speaks of “creating new pedestrian and cycle-friendly infrastructure and facilities,” but its list of proposals includes no cycling or pedestrian schemes. It does speak of “removing the opportunities for cars to park in and around our cities” but this appears to be directed more at preventing new park-and-ride schemes than at in-city parking. As well as calling for a halt to short-term measures for the sake of the metro project, it rules out even starting to develop proposals for roadspace charging. In practice, therefore, it risks becoming a recipe for inaction and further congestion.

⁷³ Ibid

⁷⁴ Ibid

Provision in the “necklace” falls well short. This is the most important failing identified in Cambridge

119. Just under half of all the out-commuting into Cambridge (23,300 people a day) is from South Cambridgeshire district, which entirely surrounds the city. Most of South Cambs’ largest population centres are large villages immediately around Cambridge, known as the “necklace.” Most are within 4 to 7 miles of Cambridge city centre, an eminently cyclable distance on mostly flat terrain (the main exception, Cambourne, is 9 miles from the city centre.) Some key centres are literally adjacent to or physically part of the city.

120. Yet 69 per cent of South Cambs commuters travelling into Cambridge do so by car or van and only 14 per cent by bike.⁷⁵ Fourteen per cent is still quite high by UK standards but is only a fraction of the figure for bike travel among those commuting wholly within Cambridge.

121. The main reason is simple: cycling into Cambridge from these places is frequently terrifying. The city is surrounded by orbital road junctions which are often hostile even to experienced riders. Routes from the “necklace” may well require sharing busy, narrow A and B roads, unprotected, with fast-moving traffic. The direct route from Bar Hill, population 5,000, requires cyclists to share something close to a motorway with 70mph traffic. Some A-roads have intermittent paths beside them, but they lack proper crossings at side roads and are often too narrow for two cyclists to pass.

122. There are some exceptions to this picture. Beside the busway, there is a good traffic-free cycle track which connects directly to the developments in north Cambridge, but not very well to central Cambridge. The most direct route from the track to the city centre (Histon Road) involves busy unprotected roads and a major junction of the A14. There is also a good path beside the A10, though it still contains a number of gaps.

New developments – in the necklace and the city – often fail to be walking and cycling-friendly

123. Cambridge City Council’s local plan states that development should “demonstrate that prioritisation of access is by walking, cycling and public transport” and that any development requiring new road access must be “give high priority to the needs of pedestrians and cyclists.”⁷⁶ However, just as in Oxford, these measures are ineffectual. The local cycle campaign group, Camcycle, says it spends more than half its time on planning matters, not transport matters. Several new schemes appear to be built with a car-centric mindset imported from retail parks and starter housing estates in Swindon, but quite wrong for Britain’s cycle capital.

124. There are no safe cycling routes from most of the city and surrounds to many of the main employment areas in the city outskirts, including the Science and Business Parks in north Cambridge. Internally, many of the new developments’ roads are not cycle-friendly.

125. The entire new town of Cambourne, the “capital” of South Cambridgeshire which will rise to 10,000 people, claims to be cycle-friendly. It is not. Many of the “cycle routes” shown by the developers on their plans are known to the rest of us as “pavements.” Cycle links with Cambridge – a 45-minute ride away – do not exist, though a new bus link could include cycling facilities. A new university development on Madingley Road has added a new cycle-unfriendly junction on a main road.

⁷⁵ Ibid

⁷⁶ https://www.cambridge.gov.uk/public/ldf/draft_submission/Full%20Plan/Full%20Draft%20Plan%20with%20title%20pages%20reduced%20size.pdf, pp 217-8

Much of the growth in Cambridge itself has been achieved using good off-road routes. But secondary routes will not be enough in future. Better routes on main roads are essential

126. Cambridge has a number of car-free or low-traffic routes connecting to the city centre or other key centres: along Garret Hostel Lane to west Cambridge; a route across Midsummer Common to Chesterton; a backstreets route to the station. More have been opened – in the 1990s, the new Carter Bridge to Coleridge, more recently the Jubilee Path to Abbey; routes beside the busway to Trumpington and from north Cambridge to St Ives; and now the new Chisholm Trail, which will provide an important north-south route.

127. Nearly all these routes are, or will be, good (though some have weaknesses which will be addressed in the recommendations). They have been highly successful in increasing cycling. As in Oxford, it is notable that the areas best served by traffic-free or low-traffic cycle routes, such as Newnham, have the highest levels of cycling.

128. However, several of them are already crowded. Some will certainly be unable to cope on their own with the higher volumes of cycling that growth will bring. They do not serve many parts of the city. Nor are they always suitable for cycling in from outside Cambridge: those travelling furthest need the most direct routes. Finally, significant further cycling growth on these routes could in future disadvantage one of Cambridge's other sustainable travel modes, walking. For all these reasons, new main road routes are necessary.

How Cambridge's main roads are laid out does not reflect how they are actually used

129. Bicycles form between a third and half of all vehicles on several of Cambridge's main roads.⁷⁷ Yet nearly all are designed largely for those in cars. There are few or no true segregated routes on any main road, apart from a stretch of Hills Road. Some main roads have shared pavement schemes for part of the route in one or both directions. Several have mandatory painted lanes. There are no best-practice protected main road junctions, though below-best-practice schemes have been done at a few junctions.

Main road improvement schemes are not good enough

130. The county council's cycling strategy envisages "Dutch-style segregation along the main radial and orbital roads."⁷⁸ Within the city, the City Deal has a number of proposed or in-progress main road schemes for cycling. Their key drawback and difference with a Dutch-style scheme is that none adequately tackles junctions, the main sites of cyclist danger and conflict with motor vehicles. Typically they do provide or promise stepped segregated tracks on the easier stretches, where they can be fitted in without reducing capacity for motorists and buses. Tracks can, however, become painted lanes wherever it really matters. Parking on the routes has not always been tackled. Implementation has often been slow and not particularly well managed.

131. A proposed scheme for Milton Road, an essential link to the Science and Business Parks, has a budget of £24 million but falls short of the standards that should be possible for that sum.⁷⁹ Some segregated tracks are promised but junctions are not properly tackled. The priority is again to maintain motor vehicle capacity, and the worst junctions are outside the scheme altogether.

132. The recently-published Histon Road proposals are typical, with some stretches of stepped track but long stretches of painted advisory (not even compulsory) cycle lane. The proposals for the dangerous junction with Huntingdon Road and Victoria Road are wholly inadequate

⁷⁷ <https://www.dft.gov.uk/traffic-counts/cp.php?la=Cambridgeshire>

⁷⁸ https://ccc-live.storage.googleapis.com/upload/www.cambridgeshire.gov.uk/residents/travel-roads-and-parking/2014_01_23_TSCSC_Strategy__v4.0_JSTSPG_changes_POST_JS_TandSPG.pdf?inline=true, p20

⁷⁹ <https://www.greatercambridge.org.uk/transport/transport-projects/milton-road/>

133. Routes are not planned as a network but in small, often isolated patches. Despite its name, the “cross city cycling” scheme of which Hills Road’s phase 2 is part consists of five separate schemes in different places which do not link up.⁸⁰

There is quite a lot of money, but not enough on cycling

134. Greater Cambridge (the city and South Cambs) has a substantial “city deal” agreement with the Government, providing £100m for transport projects to 2019/20 and promising a further £400m thereafter conditional on achieving certain economic goals. (However, there are concerns among local political leaders about whether the conditions for receiving the further tranches of money can be met within the timeframe required.)

135. The new cycling schemes described in this section are mostly funded from city deal money. Projects totalling around £153.4 million are proposed by the Greater Cambridge Partnership, the governing body for the money.⁸¹ Of this around £17.4m (11%) is for cycle-specific projects, nearly all in the city itself, notably the Chisholm Trail. £10m is for a “city access” traffic management initiative (see below).

136. The rest (£126m, or 82%) is for projects aimed principally at promoting bus journeys to and from the “necklace.” All the bus projects have, or are promised to have, cycling benefits. However, as described, the two for which outline designs have been produced so far, Milton Road and Histon Road, fall short of adequate provision for cycling.

137. The focus on reducing in-commuting by car is right, and buses have a vital role to play in it. But the correct balance has not been achieved between bus and cycling provision. Buses have a lower modal share than cycling, both within Cambridge and for journeys from most parts of the necklace into Cambridge. Bus’s commute share from South Cambs into Cambridge is 11% versus cycling’s 14%.⁸²

138. Buses lack cycling’s door-to-door or whole-day capacity. Even Cambridge’s flagship bus scheme, the guided busway, sees only one bus an hour after 8pm and shuts entirely at around 11pm – at 6pm on Sundays. Nor is it clear that the bus schemes so far proposed can be “game-changers” for bus travel in the way that good cycling schemes costing the same or less per mile could be game-changers for cycling. The Milton and Histon Road schemes will at best shorten bus journeys by only a few minutes.

139. No clear explanation was received for the balance decided on between bus and cycle schemes in the City Deal spending allocations, and there appears to have been no systematic attempt to evaluate the benefit/cost ratio of bus provision versus cycle provision. Nor do the health and sustainability advantages of cycle over bus, or its social inclusion advantages for low-paid workers (it is substantially cheaper to cycle than to travel by bus) appear to have been considered. Nor is there any published evaluation of the success or otherwise of the existing guided busway in achieving modal shift.

The city deal has some cycling-specific plans for the necklace but the pace is slow

140. The county council has a target of raising cycling’s commute mode share in South Cambs to 20% by 2023. Studies have been produced setting out broad options for a series of “greenway” routes – some off-road or on minor roads, some beside main roads, linking necklace settlements to the city or the city boundary.⁸³ Some £4.6m has recently been proposed for “quick wins,” though this appears to include widening existing routes as much as building new ones. Despite this commitment, which is welcome, the programme still feels somewhat tentative, with even the consultation phase not due to finish until 2019. It is not clear when the first actual proposals for any route will be produced, let alone when the routes will open. In some cases the route alignments proposed do not appear to link to adequate cycling routes once they reach the city limits.

⁸⁰ <https://www.greatercambridge.org.uk/transport/transport-projects/cross-city-cycling/>

⁸¹ They are listed at <https://www.greatercambridge.org.uk/transport/>

⁸² Census 2011

⁸³ <https://www.greatercambridge.org.uk/transport/transport-projects/greenways/>

The city deal has not been well communicated and has failed to inspire people with a vision of what Cambridge could be like

141. The city deal is potentially fantastic and transformative, but this potential has not come across to people. Talking to members of the public there seems to be quite widespread confusion, ignorance or actual suspicion about what it and the Greater Cambridge Partnership even are. Is it the council, people wanted to know? The county? The government? Has it got something to do with the new mayor? What is “Greater Cambridge?” Who’s in charge? How do we hold them to account?

142. Even to those who knew most, the city deal came across as a series of separate, technocratic projects which were going to impose things on them – congestion controls, new construction and so on – and stop them doing things. Little effort has been made to make the wider case for change or to create a positive picture of the future which could enthuse people.

Chapter 5

Cambridge – Recommendations

Cycling could help resolve some of the conflict between the mayor's vision and that of the Greater Cambridge Partnership

143. It appears that the mayor opposes the partnership's plans for new busways in the necklace, such as the Cambourne-Cambridge route, as do a number of local residents on conservation grounds. As stated, this report is also concerned that the partnership's plans are too heavily weighted towards buses.

144. But as we have seen, the mayor's preferred alternative, a metro, is simply not realistic or deliverable - even for Cambridge itself, still less for the widely-dispersed villages, towns and employment centres around the city. Even with population growth, these places will never be densely enough populated to justify or support such a service.

145. Even with the most favourable possible spending and political winds, the very most Cambridgeshire could hope for would be a system serving a small part of the area, many years in the future. But the transport needs of the whole area are already becoming acute right now. Nor is it clear that new metro lines would be any less impactful, or any more acceptable to greenfields protestors, than new busways.

146. Yet doing nothing is clearly not possible either. Given the area's high existing cycling base and favourable topography, improved cycling facilities of the kinds described below could make a very significant contribution to the area's transport needs, while being far less impactful than new busways or metro lines.

Main road routes must be built to a better standard and junctions must be tackled

147. The *Milton Road* scheme should be completely redesigned to include proper cycle-safe junctions, not shared with pedestrians, and to avoid some of the compromises decided on to favour cars and buses. There is ample space on this road. It should extend significantly further north, providing a safe and continuous route to the Science and Business Parks, to the park and ride site and to Milton itself, including cycle-safe junctions throughout (though the A14 is already crossed by a bridge here).

148. The gyratory at the southern end of Milton Road is a major obstacle which is not tackled in the scheme. The roads here could be restored to conventional two-way operation and safe routes provided on and through them for cyclists. There is enough room on most of Victoria Avenue south of the river for segregated tracks, linking to the Newmarket Road scheme, though this would require the removal of a bus lane. Alternatively, though this is less desirable, a route avoiding the gyratory could be created with a better crossing of Chesterton Road between Herbert Street and Ferry Path to the Fort St George bridge.

149. On *Hills Road*, cycle-safe junctions incorporating hold-the-left need to be provided at all major junctions, including Cherry Hinton Road, Station Road and Lensfield Road northbound, sacrificing capacity for motor traffic to do so. There is also room for stepped tracks on several parts of the road further north and nearer the city centre than at present.

150. On *Lensfield Road*, *Gonville Place* and *East Road*, there is space for segregated tracks and cycle-safe junctions, though motor capacity will be reduced.

151. On *Huntingdon Road*, there is space for segregated tracks. The Victoria Road/ Huntingdon Road junction must be redesigned to make it safe for cyclists. Castle Street is too narrow for segregation. It should be investigated whether it can be blocked to through traffic (except buses) and Huntingdon Road traffic sent via Lady Margaret Road.

152. *Histon Road* is probably too narrow for adequate cycle facilities to be provided, but is a key route to Castle, Arbury, Histon and the busway cycle route. Instead of infrastructure on the road, a high-quality traffic free or segregated route should be provided along the eastern edge of the Darwin Green development area, allowing safe cycling access from the new segregated tracks on Huntingdon Road to Castle, Arbury, Histon and the busway cycle route. A cycle-safe crossing of the A14, probably a new bridge, should also be provided.

A network of cross-country routes serving the necklace should be constructed

153. Several high-quality cycle routes serving many villages in the “necklace” could be constructed for the same price as one or two bus corridors serving a smaller number of places less well. Direct cross-country cycle routes should be built, a model long used in the Netherlands and now being rolled out around Danish cities. They will be lower-cost and lower-impact, so could be less controversial. To improve speed of delivery they could follow existing public rights of way. There is, for instance, a bridlepath all the way from Coton (the end of the current west Cambridge cycle route) to a point just south of Cambourne. Another bridlepath leaves the busway near Cambridge Regional College and heads north on an old Roman road to near the new developments at Waterbeach.

154. But the routes must be tarmac, not just muddy paths with new signposts. (They need not be lit; most of those in Holland are not, though reflectors could be used.) The vast majority of public rights of way around Cambridge would be unaffected by the proposals. However, if people object to the tarmacing of bridlepaths, new sealed-surface routes may need to be built.

155. Some of the greenway proposals include elements of this and must be progressed with far greater urgency. However, there will also need to be further segregated tracks and cycle lanes on or beside some main A and B roads to the necklace, as on the A10. The A10 track must be completed throughout from Trumpington to Royston.

156. The Milton Road, Hills Road and Darwin Green schemes described above will be key links to necklace cycle routes.

Every new development must include excellent cycle routes to and within it

157. Within the timeframe of this study, it has not been possible to examine all the plans for new developments such as Northstowe and Waterbeach. But those examined are not generally adequate. The cycle campaign group in Cambridge must be funded to conduct full-time scrutiny of planning matters, building close relationships with planning officials and holding developers and planning authorities to account.

Improvements should be made to some of the secondary routes

158. Although most of the secondary routes in Cambridge are good, some have barriers, usually main roads or junctions where crossings are inadequate. Between King Street and Midsummer Common, the Four Lamps roundabout is a blockage on the most direct backstreets/off-road route from the city centre to Chesterton and Abbey, as well as a danger to cyclists on the main road routes that cross it. It should be redesigned to make it cycle-friendly. On the route to Cherry Hinton, the Radegund Road/Perne Road roundabout is a barrier and should be tackled. Access to the southern section of busway from the station to Trumpington is poor. There is scope for filtering of some roads on backstreet routes.

Park and ride sites should be better connected for cycles to allow ‘last-mile’ cycling

159. Some of the park and ride sites, including Trumpington and Newmarket Road, are reasonably well connected to secondary cycle routes. The proposed Hills Road improvements would serve the Babraham Road park and ride site. The road junction serving the Madingley Road park and ride site is difficult for cycles. A new cycle exit at the east of the site would allow cyclists to cross directly to the road leading to Charles Babbage Road and the west Cambridge/ Garret Hostel Lane cycle route.

Traffic reduction is still on the agenda and should be pursued more vigorously

160. Under a programme called “City Access,” the Greater Cambridge Partnership, the local delivery body for the City Deal agreement with government, states that it “plans to achieve a reduction in peak-time traffic levels in Cambridge by 10-15% by 2031.”⁸⁴

161. Stated instruments to achieve the 2031 target include a workplace parking levy, clean air zone, “traffic management” and reductions in non-residential on-street parking (much of which is still free to commuters from outside Cambridge.) Traffic management includes “reallocating road capacity to improve walking, cycling and bus journey reliability” and “reducing the number of cross-city movements by car.” Congestion charging “is not ruled out as a future option, but our current focus is on finding alternative measures to manage traffic as a first step.”⁸⁵

162. These are the right steps but the 2031 target is not ambitious enough; the partnership should draw up plans to achieve it by 2021. A number of these measures will be needed to achieve such a target but the mix is for local leaders to decide.

City deal funding should be made conditional on traffic reduction and on spending more on cycling

163. Local political leaders say that the “assurance framework,” the means to getting the further £400m of funding promised after 2020, is not aligned to goals in a way they may be able to meet. New and clear goals should be set now, including the production of an evidenced plan to reduce traffic in Cambridge by 15% by 2021 and a commitment to spend more of the budget on cycling. Greater Cambridge’s local transport plan is in any case due for renewal in 2019; it should be brought forward to encompass these goals.

Any traffic reduction measures must form part of a wider package to benefit all users

164. Previous traffic reduction measures in Cambridge, such as the closures of central streets, were accompanied by simultaneous improvements such as the opening of park and ride sites and better bus services – marketed as “Integration Day.” It is essential that traffic reduction and cycling measures be presented as part of a vision which enthuses people, including non-cyclists, and not simply as a technocratic measure.

165. Improvements aimed at non-cyclists could include making the park and ride sites free; charging lower and simpler fares; widening narrow and busy pavements; introducing freight consolidation in the city centre (using electric vans and cargo bikes) to reduce the movement of goods vehicles.

⁸⁴ <https://www.greatercambridge.org.uk/transport/projects/city-access/>

⁸⁵ Ibid

However, pro-cycling changes in many places can be made quickly, and should not be dependent on the full traffic reduction package being agreed first

166. Many cycling improvements, including better junctions and new routes, are possible before any general package to reduce traffic, and should be proceeded with accordingly. There is no need to wait for every one of the elements suggested above to be in place before starting on anything.

Funding

167. Cambridge's need for new cycling funding is less than Oxford's, because of the substantial amounts already granted or promised by the City Deal. In the necklace, the cross-country routes proposed in para 147 and the proposed new crossings of the A14 should be funded by dropping or reducing the scope of one of the two potential busway schemes, probably the A1307/A1301 scheme (costed at £39m).

168. For schemes in Cambridge city, the amount of £24m already allocated from the City Deal for the Milton Road scheme should be enough to make it work properly for cyclists as well as buses. The City Deal money already allocated for Hills Road (a share of the £8m "cross-city cycling" project) and Histon Road (£4m) is probably not enough to make them good cycle routes. The necessary extra money could also come from dropping or reducing the A1307/01 scheme.

169. However, it is recognised that some schemes proposed will not be fundable from existing City Deal monies without digging too deep into the bus elements of the budget. It is therefore recommended that an additional £25m be granted to start work on the gyratory at the southern end of Milton Road (not included in the current Milton Road scheme) and the Huntingdon Road and Lensfield Road/East Road schemes. Future tranches of the City Deal funding would cover the completion of these schemes.

Cycling in Milton Keynes



Chapter 6

Milton Keynes

170. Milton Keynes is different from the other two cities, and in many ways from any other British city. It is largely new and built for the car, with an American grid pattern; wide, fast roads; and far lower densities than Oxford or Cambridge. Its roads have more capacity than theirs and it is still possible to drive easily through most of the city at off peak times. In the peaks, however, queues and delays are common. Like its model, Los Angeles, Milton Keynes is finding that building cities for the car does not work.

171. By 2031, a further 26,500 homes are due to be built in the city by 2031, often by densifying existing neighbourhoods, which will increase demand on their roads. As the MK Futures 2050 report, backed by the council, stated: “The forecast impact of this growth will be to increase total travel times in the morning peak by 54%...the city cannot meet the very high costs of rebuilding key road junctions and other network improvements that would be needed to avoid gridlock.”⁸⁶

The case for cycling

172. The council’s local transport plan states that it wants MK to “have the most sustainable transport system in the country” by 2031. This is a big task; cars account for 75 per cent of commuter journeys wholly within the city and about 65 per cent of all journeys.⁸⁷ However, despite its car-centric nature, cycling in MK is slightly above the British average – 4.2 per cent of work journeys wholly within the city are cycled.⁸⁸ I found many more cyclists than I expected. The car clearly is, and will remain, Milton Keynes’ dominant mode but bikes could become its most important secondary one, relieving significant pressure on the road network.

173. 78 per cent of working-age residents in MK work within the city, and around 40% of journeys to work in and around MK are less than 5km in length, a highly cyclable distance.⁸⁹ Milton Keynes is also a young city, with an above-average number of people under 30, the group traditionally most likely to cycle. Above all, it has the basis of a good cycle network.

Build it and they don’t come?

174. Milton Keynes was built with a roughly 300km network of “redway” cycle routes extending to most of the conurbation, usually traffic-free and separate from the roads. MK’s low cycling rate relative to London, Oxford or Cambridge, which have fewer cycle routes, is sometimes used as evidence that dedicated facilities do not promote cycling.

175. In fact, as stated, cycling levels for commuters within Milton Keynes, are slightly above the UK average and are also above those within the nearest similarly-sized place, Northampton. The redways do promote cycling, in a small way. Why they don’t do it in a bigger way is for reasons specific to the redways and to Milton Keynes rather than because of anything about cycling facilities in general.

⁸⁶ <http://www.mkfutures2050.com/images/pdfs/reports/MK50-Futures-Report-1-FINAL-SP.PDF>

⁸⁷ 2011 census

⁸⁸ 2011 census

⁸⁹ Figures from city council

Driving is easy in Milton Keynes and cycling is harder

176. The main reason that relatively few people use the redways is that it is unusually easy to drive in MK. However, there are also a number of weaknesses in the redway network which make it harder and more discouraging to use than it could be.

There are two highway networks in MK – but only one is treated as such

177. The roads for cars are well maintained, signposted and lit. The roads for cycles – the redways – feel in places as if they have not been touched since they were built. Surfaces are often rough (though some resurfacing has been done); vegetation grows across sightlines; lighting is often poor; many signposts are faded and illegible; the network has an air of isolation and neglect. As the council's cycling strategy admits, the routes "are often perceived to be unsafe."⁹⁰

178. The council admits that there has been a "steady decline" in the condition of footways and redways and it classifies a high proportion of the footway and redway network as "functionally impaired" or "structurally unsound."⁹¹ Because most of the city's road and path network was built at around the same time, most is now requiring repair at around the same time, too.

179. The council has budgeted for capital improvements both of carriageways (the motor roads), footways and redways. The capital budget for the carriageways is £7m a year.⁹² For the 300-plus km of redways and a further 1135km of footways it totals £800,000 a year, clearly insufficient to address the redways' problems.⁹³ The council's published resurfacing schedule for 2017/18 includes 64 road resurfacing projects and footway resurfacing in four areas, but no redway resurfacing projects.⁹⁴ Other documents suggest that there will be one redway resurfacing project this year.⁹⁵

The redways are not very good at crossing roads

180. They do it in two ways: first, on at-grade crossings, where motor traffic – often moving very fast – always has priority. Bad design and vegetation means that sightlines between motorists and cyclists are often poor and dangerous, yet the high speeds of vehicles allow little margin for error. Sometimes redways go under a road instead, dipping to an underpass. However, for those not crossing but continuing on the same side of the road, this sometimes forces you to ride down and then up a slope to continue your journey. In places, level tracks around the dip have been provided to avoid this.

The redways do not go to the city centre or to some other main centres

181. Perhaps their key shortcoming is that, apart from one north-south route parallel to Saxon Gate, the redways give up at the edges of Central Milton Keynes. Anyone wishing to cycle to the centre has to share often busy underpasses with pedestrians, then cycle through the car parks that line the buildings' frontages, frequently conflicting at busy times with cars pulling into or out of the parking spaces, or with pedestrians. It does not feel like you are supposed to be there. The cycle network also gives up in the pre-New Town parts of Milton Keynes, Bletchley and Stony Stratford.

⁹⁰ https://www.milton-keynes.gov.uk/assets/attach/2/Draft_Cycling_Strategy_Sept_2012_Consultation_Draft.pdf

⁹¹ <https://www.milton-keynes.gov.uk/assets/attach/42608/FootwayLifecyclePlan.pdf>, pp 4,28

⁹² <https://www.milton-keynes.gov.uk/assets/attach/41931/CarriagewayLifecyclePlan%2016.pdf>

⁹³ <https://www.milton-keynes.gov.uk/assets/attach/42608/FootwayLifecyclePlan.pdf>

⁹⁴ <https://www.milton-keynes.gov.uk/newsletter/read/mkhighways/2601/10561>

⁹⁵ <https://www.milton-keynes.gov.uk/highways-and-transport-hub/projects-and-schemes-hub/roads-programme-2017-2018>

There are some other design shortcomings

182. Many of the routes are less direct than the roads. Routes which follow a road often cross from one side of the road to another; there are more gradients on the redways than on the roads, because of the underpasses and crossing treatments. The redways, in short, are far from best practice in separated cycle provision. However, they would with some improvements form the basis of a reasonable cycle network.

The council may be underestimating cycling's potential to make transport more sustainable

183. The current main plank of MK's plan to make its transport more sustainable is a bus rapid transit system, provisionally costed at £265m.⁹⁶ However, MK is unusually difficult to serve by bus, being organised in grid squares bounded by main roads with few traditional built frontages on them.

184. Housing and industry is within the grid but only a few bus routes actually enter the grids, whose roads are not designed for through traffic or large vehicles. To enter each grid in turn would mean that a bus's journey took too long, so most parts of MK are served by bus stops on the main roads on the edge of the grid. Passengers must walk further to the stops, often on isolated paths or subways, and the stops themselves feel rather removed from other human activity. Buses have a commuter mode share within the city of only 7.4%⁹⁷ These same factors make cycling a perhaps more suitable candidate for development.

185. There is also considerable interest in shared autonomous vehicles. But unless the autonomous vehicles were large (the size, say, of a small bus), they will still be fairly inefficient users of roadspace and could well lead to more congestion, not less, particularly since they would take many if not most users from the existing bus network.

The redways should be upgraded, including improved at-grade crossings of roads and measures to avoid gradients

186. The council has for several years designated some redways for improvement as “express routes” or “super routes.” Some resurfacing and better wayfinding has been done, but not much. The super routes (over 100km of the 300) should be resurfaced, made inviting, brightly lit and better signposted, with vegetation cut back, starting with those closest to the city centre. At-grade crossings of roads should be remodelled to give cyclists and pedestrians priority and realigned to improve sightlines. Where the route dips to make underpass crossings of roads, more level-surface “bypasses” for those not crossing should be provided to avoid riders constantly having to go up and down dips.

An east-west city centre route should be created

187. There are two possibilities: the first is to use the wide empty space in the central reservation of Silbury Boulevard, between the two lines of trees. The second – preferable because it would be easier to get on and off – is to take out one of the four rows of parking outside the buildings on Silbury Boulevard, probably on the shopping centre side, for a segregated track.

188. This would avoid conflict between cyclists and pedestrians, and between cyclists and car park users, but would cost several hundred of Central MK's 20,000 parking spaces. However, the June 2017 parking occupancy survey done by the council shows that there are typically plenty of free spaces, even right outside the shopping centre. The pay-and-display spaces in zone E2, for instance (on Silbury Boulevard by John Lewis) operated at an average of only 15 per cent occupancy on a Tuesday and 46 per cent on a Saturday.⁹⁸

⁹⁶ Information from council

⁹⁷ 2011 census

⁹⁸ <https://www.milton-keynes.gov.uk/assets/attach/46615/Tuesday%20%26%20Saturday%20June%202017.pdf>

Redway routes must extend into areas of new development

189. As in Oxford and Cambridge, policies to ensure that new developments are cycle-friendly are not followed. The new neighbourhoods now being developed are not being built with redways. This must be urgently rectified in all future developments and existing cycle-free schemes retrofitted.

Strong promotional activity is required

190. The redways could make up an attractive cycle network, particularly for short journeys. But the possibility of cycling had not occurred to many of the people I spoke to in Milton Keynes. They did not know they could cycle on traffic-free paths to most parts of the city because there is almost nothing to tell them. Extensive advertising and social media activity should be done and one of the elements of the wayfinding should be to clearly mark the redways' presence in the city centre where people can come across them.

191. Traffic reduction measures on the roads are not of such direct relevance to cyclists in Milton Keynes as in Oxford or Cambridge because of the two separate networks (though some cyclists do use the roads because of the redways' drawbacks.) However, it is likely that ever-growing congestion will itself drive users to cycling if the improved routes are sufficiently well promoted.

Funding

192. It is recommended that £25m be granted to Milton Keynes. £20m of this should be used (in addition to the £1.1m already granted in August 2017) to resurface and improve all the remaining redway super routes. A further £5m should be granted to create the east-west route through the city centre recommended in paras 181-2. Redways in new developments should be delivered by developers under section 106 agreements.

Getting schemes done



Chapter 7

Getting schemes done

193. As one political leader in Oxford delicately put it, his electorate is “more disputatious than in many other places.” A business leader was blunter, saying that Cambridge had too many members of the “Triple-A Club: against absolutely anything.”

194. In Cambridge, Oxford and elsewhere, whenever attempts are made to reallocate or charge for roadspace, opposition is inevitable. This should not itself be feared; opponents of change usually prove to be in the minority and noise should not be confused with numbers. But if it is not handled properly, it can still prevail. It did prevail over congestion charging schemes in Manchester, Edinburgh and Cambridge.

195. However, Cambridge, Oxford (and London) have also shown that it is nonetheless possible to take roadspace away from motor vehicles and give it to cyclists and pedestrians, if it is done in the right way. I spoke to several of those involved in Oxford and Cambridge’s successful projects to remove traffic from the city centre. From what they said, and my own involvement in helping make change against opposition in London, I draw the following lessons:

196. *Prepare the ground.* Before any specific proposal is put forward, the ground must be carefully prepared, with the public persuaded of the need for change and an attractive alternative to the status quo laid out that people can get interested in. Articulate a clear vision of what you want the city to look like (London published a 30-page document setting out its policy.) This is also helpful in communicating your goals to your own staff. But don’t allow this phase to drag on too long.

197. *Relate cycling and traffic reduction to things that affect people’s lives directly, not just as technocratic engineering measures, and show why there’s a problem to fix.* It could be related to air pollution: one city is installing air pollution monitors outside schools to show parents how much danger is being caused to their children. London used doctors and emergency service personnel, more trusted by the public than politicians, to talk about how it could save lives, make people healthier and help the NHS survive at a time of rising demand.

198. *Work out every aspect of a proposal thoroughly and in detail before you present it,* to anticipate and pre-empt likely objections, and get it as right as possible at the beginning. London examined matters along the proposal routes such as parking in a very granular way, looking at exactly who parked where, for how long and why and working out ways of accommodating as many of those needs as possible (eg by moving a parking space slightly, or providing a new one just round the corner) without compromising the essential principles of the scheme.

199. *Once you make a proposal, be confident about it – and absolutely clear about your intentions, the benefits and disadvantages.* Proposals must be clear and unambiguous, as detailed as possible, including good maps and drawings, and frank about the disadvantages, to build trust and discourage misrepresentation.

200. *Schemes must be part of a package with benefits for others,* as well as cycling. But they mustn’t sacrifice the minimum standards in chapter 2.

201. *Demonstrate support for schemes.* In London, opinion polls (done by an independent professional pollster, YouGov) showed clear majorities of the public supported the schemes and were useful in winning the political argument.

202. *Have data ready to counter fears and misrepresentations.* Fears are natural but need to be countered with specific data to stop them being converted into facts. For instance, businesses along the route of one of the London superhighways were worried about loss of trade. We were able to counter with data from

surveys showing that almost no-one who went into their shops came by car. Objectors overestimate the importance of motor vehicles. Common misrepresentations which usually crop up (such as a claim that cycle lanes cause pollution) should also be prepared for.

203. *Ask the right questions.* The question in Cambridge's public consultation last year on introducing road blockages was: "Do you think [they] will improve or worsen your journey?" Instinctively, few people except those already schooled in the science of traffic management would respond that a roadblock would improve their journey, and so it proved. Perhaps it could have started by asking "Do you think there is too much traffic in Cambridge?" and then, to those who answered yes, something like "What do you want to do about it?" with a range of options and the likely consequences of each option explained in terms of traffic reduction and driver inconvenience.

204. *Accommodate reasonable objections, but not wrecking ones.* For instance, in the earlier Cambridge street closures, some people who could show special cases were given keys to the rising bollards. As in London, the schemes were adjusted to take account of reasonable objections and reduce impact. Recognise that for some objectors, however, no consultation will ever be long enough and no concession short of abandoning the scheme or watering it down to pointlessness will be acceptable.

205. *Don't try to achieve consensus on schemes.* You won't get it on anything but the blandest, most pointless schemes. As the former transport commissioner of New York, Janette Sadik-Khan, said: "Efforts to reach an idealised consensus have resulted in years of indecision, inaction and paralysis-by-analysis as leaders attempt to placate the opposition that accompanies any change to the streets."

206. *Compromised schemes seem to get as much opposition as good ones.* London found that third-way options, trying to keep all sides happy, ended up angering everybody and pleasing nobody. You might as well do good schemes and get enthusiastic support.

207. *Trials may be a useful way of proceeding,* allowing you to promise that a scheme can be changed or removed if it is not working. New York used trials extensively; in Sadik-Khan's words: "Our projects became instruments for the public to gain understanding." Schemes were implemented with materials such as planters, parked cars and plastic barriers. Of course some of these materials are not appropriate for some kinds of street. And trials have to be carefully readied and modelled in exactly the same fashion as permanent schemes. It is not enough to put something down and hope it works.

208. *Gradualism?* One approach would be to do schemes gradually: one road closure at a time, perhaps on a trial basis; a small congestion charging area, widening later. I do not reject this; it must be a judgment for local politicians who know their ground. It was effective in the successful "core scheme" street closures in Cambridge. But experience in London, New York City and elsewhere is that it was no more difficult – and obviously achieves more – to act more widely and quickly.

209. All those involved in previous schemes said one other thing: be determined.

A note on the structure of this report

Oxford and Cambridge have many factors and issues in common, though also important differences. Findings and recommendations for these two cities are summarised together, followed by individual chapters giving detailed findings and recommendations for each city. Milton Keynes, which is significantly different from the other two, has its own section of findings and chapter of recommendations and its own local analysis.

This report was commissioned as part of the evidence base for the National Infrastructure Commission's report *Partnering for Prosperity: A new deal for the Cambridge-Milton Keynes-Oxford Arc*. As with all supporting evidence commissioned by the NIC, the views expressed and recommendations set out in this report are the author's own and do not necessarily reflect the position of the National Infrastructure Commission.